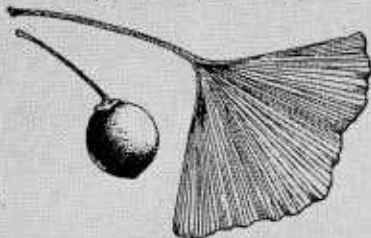
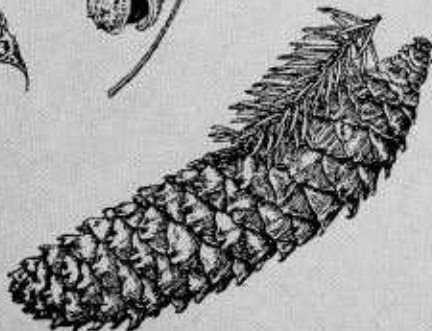
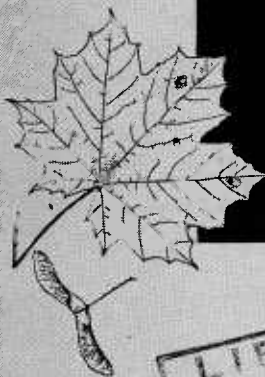


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#212



# Sixty Trees from Foreign Lands

AGRICULTURE HANDBOOK NO. 212





Growth Through Agricultural Progress

# SIXTY TREES FROM FOREIGN LANDS

By ELBERT L. LITTLE, Jr., Dendrologist<sup>1</sup>

Since ancient times mankind has sought from distant parts of the earth new and better farm crops, garden plants, and trees. Many of these strange trees, introduced from seeds brought back by explorers and travelers through the years, have been highly successful for lumber, shelterbelts, shade, ornament, fruits and nuts, and other uses where the conditions for growth are not too different from those in their native lands.

Primarily for identification, this bulletin presents descriptions and drawings of 60 species of trees introduced from foreign countries and commonly planted in different parts of the United States. This bulletin is an enlarged revision of the article *Fifty Trees from Foreign Lands*, which appeared in *Trees, The Yearbook of Agriculture*, 1949, pp. 815-832, illus. (Yearbook Separate No. 2157).

Among these trees are some popular for various purposes, such as wood and lumber, shelterbelts, Christmas trees, shade, ornament, street, highway, and landscape planting. As cultivated trees are omitted from most popular tree guides, a separate publication is needed. Many other well-known varieties cultivated in orchards for their valuable fruits and nuts have not been included.

Discovery of the New World made possible great interchange of trees and other plants between East and West. Much of the early botanical exploration of North America was made by horticultural collectors who were

hunting new plants for European gardens.

With settlement of the climatically diverse parts of the United States came introduction of trees from far away. Naturally the colonists from Europe brought their familiar shade trees, most of which succeeded also in eastern United States where the climate is similar. Examples are Norway spruce, white poplar, European white birch, and sycamore maple. The Yankee Clippers and afterwards botanical explorers brought back from temperate parts of Asia other kinds, such as ginkgo, Chinese scholartree, panicle goldenrain-tree, and royal paulownia. The subtropical regions of Florida, southern Texas, southern Arizona, and California, as well as the tropical islands Hawaii, Puerto Rico, and Virgin Islands, have obtained a wealth of exotic trees from tropical lands throughout the world.

After some years of testing, the good points and limitations of these introduced trees, such as their degree of hardiness to winter temperatures, soil and moisture requirements, drought resistance, susceptibility to insects and disease, and tolerance to city smoke and dust have become known. Indeed, some of these exotics have been so successful that they have escaped from cultivation and have become naturalized, propagating themselves in waste places, roadsides, and woods as if wild. However, the native trees in any locality, having become adapted through the ages, usually are preferable to untested exotics.

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For several reasons foreign trees have not been widely planted in the United States for forestry purposes. The United States has been richly endowed with timber trees and possesses many more species than corresponding areas of Europe, for example. Also, large acreages of virgin forests remain, chiefly in the National Forests of the Western States. Under good forest management the cutover forests are perpetuated through natural regeneration. Where plantations are needed, such as on abandoned farmlands and burned areas, the tested native trees generally have been more satisfactory than introduced trees. Also, native trees are easily obtained as seeds and nursery stock. However, foreign trees will become increasingly important in future tree improvement programs, for example, in producing more vigorous hybrids and varieties, both rapidly growing and resistant to diseases and insect pests.

Scotch pine, Norway spruce, and European larch, perhaps the most popular foreign forest trees, have been planted chiefly in the Northeastern States. The first two are cultivated also for Christmas trees. California has its plantations of eucalyptus from Australia, which provide a source of rapidly grown pulpwood. In the prairie-plains shelterbelts, several exotic trees, such as the following, have been successful: Siberian elm, Chinese elm, Russian-olive, Russian mulberry, Austrian pine, white willow, and ailanthus.

At present nearly a thousand kinds, or species, of foreign trees from temperate lands, not counting their numerous horticultural varieties are grown in the United States for shade, ornament, and related uses. Additional thousands not yet popular have been introduced in arboretums and botanical gardens for testing or have been planted infrequently as specimen trees. The trend is toward reduction in number through elimination of the inferior and the less adapted. At the same time

improved varieties and selections are being developed through scientific tree breeding and are offered by the trade.

Home owners in all parts of the United States now have wide selections of foreign trees for planting. The less familiar exotics command attention in contrast to the common native shade trees. Improved horticultural varieties, such as those with drooping branches, columnar crown, odd-tinted or cutleaf foliage, or distinctively colored flowers, are available.

Aristocratic trees rich in history and legend may be planted. Among these is the ginkgo, a peculiar living fossil from China saved from extinction by plantings around temples through the ages. The cedar-of-Lebanon, so closely associated with the Holy Land and the source of the beautiful wood used in King Solomon's Temple, deserves to be planted more but is not hardy in the far North. The Italian cypress, the classical cypress of the ancient Greeks and the Romans, whose columnar shape is displayed in formal gardens, can be grown in Southern and Pacific States.

For a tropical atmosphere, hardy trees that are representative of their relatives from warmer lands can be grown northward. Examples are silk-tree (*mimosa*), with its fernlike foliage and pink, ball-like blossoms; *ailanthus*, with its coarse, compound leaves; and royal paulownia, with its big leaves and striking clusters of large violet flowers.

Likewise, the zones where certain less hardy foreign trees can be grown in the United States are being extended northward. Trees from seeds collected at the coldest areas within the natural range have proved more resistant than earlier introductions. Cedar-of-Lebanon is an illustration. However, the number of tree species, both native and introduced, decreases toward the North.

For their size, the subtropical regions from Florida to California have more

different kinds of exotic trees than do any temperate regions of the country. Because of the richness of tropical floras over the earth, many hundred kinds of trees have become available to these warmer regions. Indeed, one author records 1,000 kinds of exotic flowering trees in his gardens in southern Florida. Hawaii, Puerto Rico, and the Virgin Islands in the frost free tropics have a seemingly endless selection of exotic timber, shade, and ornamental trees, many with beautiful, large, brightly colored flowers.

Thus, a wide selection of foreign trees is available for every locality and purpose. Certain double or triple purpose trees, which can serve for two or more uses, may be preferred. For example, nut trees and fruit trees may be suitable also for shade or ornament. Besides shade, some kinds have showy flowers, attractive fruits, handsomely colored spring or fall foliage, or other unusual features. A few kinds produce high-quality wood that could be utilized whenever the mature tree is cut. Many trees provide cover and food for birds and other wildlife. For planting around homes, trees of small and medium size when mature require less maintenance than large trees.

The 60 trees described here for identification are among the commonest and most popular from foreign lands. Emphasis has been given to the trees widely planted for shade and ornament in temperate regions of the United States. However, about a fourth of the species selected are tropical trees restricted to the subtropical regions along the southern border from Florida to California.

Several are no longer widely recommended, because of objectionable features or susceptibility to disease or insects or because some better kinds are available, though they may be suitable for special purposes. Nevertheless, they have been planted so frequently that they merit inclusion in a list used for identification purposes. Nearly half these 60 species have al-

ready become naturalized and grow in their adopted home as if native.

The description of each tree species contains the approved common and scientific names, as well as other names frequently used. Size is stated as large (more than 70 feet tall), or medium-sized (30 to 70 feet tall), or small (less than 30 feet tall). Leading characteristics useful in identification, such as form of the tree, bark, leaves, flowers, and fruits, are briefly described in nontechnical terms. However, some horticultural varieties with unusual or extreme characteristics may differ from the general descriptions. Though many trees reveal their geographic origin in their names, the native home is stated along with the regions in the United States where the species is grown.

Notes on special uses and desirable qualities, as well as objectionable points, are included. The drawings of leaves and fruits mostly by Leta Hughey, late botanical artist, Forest Service, will aid in naming trees or specimens.

To assist in identification, the 60 species have been combined into 12 artificial groups according to leaf characters, such as whether evergreen or deciduous (shedding leaves in fall), whether borne singly (alternate) or paired (opposite), and whether or not divided into leaflets. (Leaflets differ from leaves in usually smaller size and in their attachment on a common leaf-stalk that sheds with them.) These 12 groups are designated by letter, followed by the leaf characters of the group. A specimen being identified should first be placed in the proper group and then compared with the descriptions and drawings.

Information on hardiness and other climatic characteristics is important in the selection of tree species for planting and is useful also in identification. The degree of hardiness of introduced trees and shrubs to cold weather in winter is expressed by division of the United States into hardiness zones, cli-

matic zones based upon average annual minimum temperatures. Writers on horticultural subjects have adopted these zones, citing the northernmost zone where each species can be grown and will survive the coldest winter weather.

The Plant Hardiness Zone Map reproduced here was prepared by the National Arboretum, Agricultural Research Service, U.S. Department of Agriculture, in cooperation with the American Horticultural Society. This map is an adapted version of a larger map in color published in 1960. The latter is the most recent revision based upon records of the U.S. Weather Bureau.

Ten zones for North America have been designated by number, beginning with zone 1, with average annual minimum temperature below  $-50^{\circ}$  F. and representing the treeless zone of northern Canada and Alaska. The nine zones of the United States are divided from north to south by  $10^{\circ}$  intervals based upon average annual minimum temperatures (Fahrenheit) as follows: Zone 2,  $-50^{\circ}$  to  $-40^{\circ}$ ; zone 3,  $-40^{\circ}$  to  $-30^{\circ}$ ; zone 4,  $-30^{\circ}$  to  $-20^{\circ}$ ; zone 5,  $-20^{\circ}$  to  $-10^{\circ}$ ; zone 6,  $-10^{\circ}$  to  $0^{\circ}$ ; zone 7,  $0^{\circ}$  to  $10^{\circ}$ ; zone 8,  $10^{\circ}$  to  $20^{\circ}$ ; zone 9,  $20^{\circ}$  to  $30^{\circ}$ ; zone 10,  $30^{\circ}$  to  $40^{\circ}$ .

As factors other than latitude affect the coldest temperature in winter, the hardiness zones do not extend across the United States from east to west uniformly in parallel strips. The zones curve southward in the interior, where extremes of temperatures are great, and shift to the south also in mountainous regions, where higher altitudes have a cooling effect. Zone 2, the coldest, crosses the Canadian border only in extreme northern Minnesota and North Dakota.

Along the coasts the southern zones project farthest north, owing to the moderating influence of the oceans and ocean currents. For example, New York City and Boston, both located on the coast, are in warmer

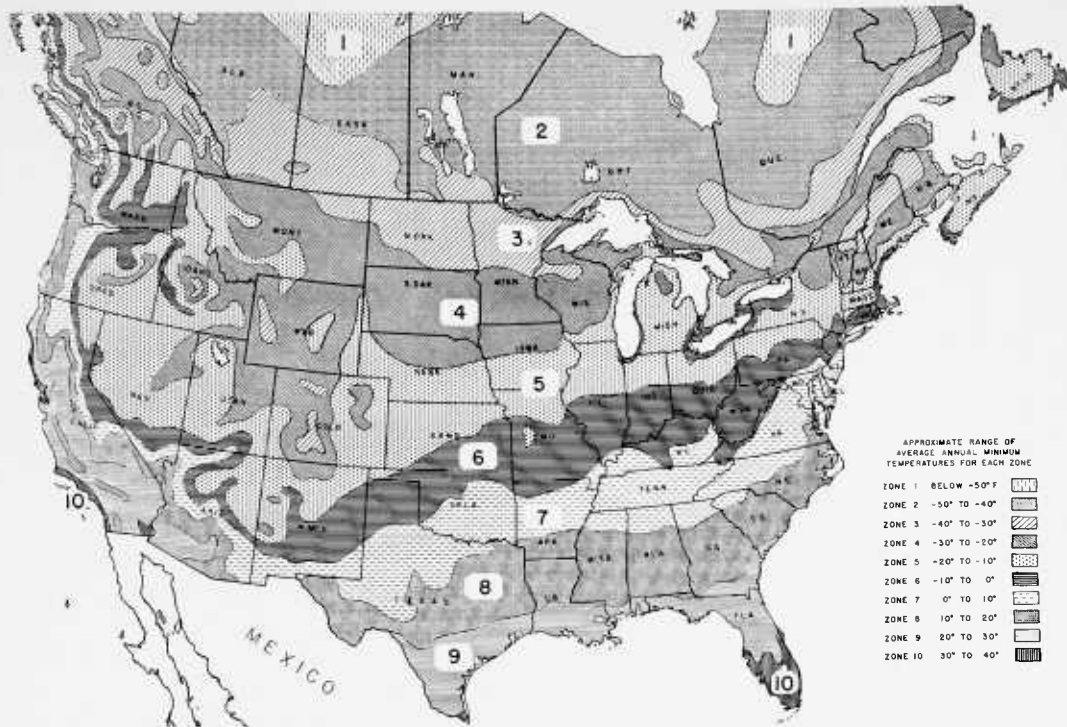
zones than nearby inland areas of the same States. On the Pacific coast zone 9 extends north into Canada. The Great Lakes also have an influence, as shown by the warmer zones along their southern and eastern borders.

Zone 10 comprises the nearly frostless subtropical areas of southern Florida, southern Texas, and southern and coastal California. Subtropical trees can be grown also in the warmer parts of zone 9 in these same States and others along the Gulf, South Atlantic, and Pacific coasts.

At the end of each tree description, the northernmost zone of hardiness is stated, or placed in parentheses if the species is hardy only under favorable conditions or in warmer parts of this zone. Though the southernmost zones are not indicated, species hardy in the far north generally will not thrive also in the extreme south. Naturally many trees from humid regions will not be successful in drier parts of these temperature zones unless watered or irrigated.

Many other tree species cultivated for wood, shade, and ornament are also native and may be identified in the State tree guides and other references. *Important Forest Trees of the United States*, by the author, describes and illustrates the common timber species. Information about native and introduced forest trees suitable for planting may be obtained from the State foresters.

For further information about trees from foreign lands and their identification, there is included a selected list of general references together with a few special publications on the distinctive trees of the subtropical regions. Most States, through their agricultural experiment stations or the State college extension services, have issued bulletins or circulars on the shade and ornamental trees, both foreign and native, best suited to their regions and containing instructions on planting and care.



Plant hardiness zone map of United States (from U.S. Dept. Agr. Misc. Pub. 814. 1960).

## Index of Common Names by Number

The 60 species included in this leaflet are listed here by accepted common names. Other common names in use are mentioned with the descriptions. The numbers refer to the descriptions of the species on pages 8–28.

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## Index of Scientific Names by Number

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### A. Evergreens, leaves scalelike, Nos. 1 to 5.

1. HORSETAIL CASUARINA, *Casuarina equisetifolia* L. (horsetail beefwood, "Australian-pine"). Medium-sized to large evergreen tree resembling conifers, with thin open crown of drooping branches and with leaves reduced to scales. Bark gray brown, smoothish, becoming rough, furrowed, and shaggy. Twigs wiry, pale green, jointed and grooved, with rings  $\frac{1}{4}$  inch apart consisting of 6 to 8 brownish scale leaves  $\frac{1}{16}$  inch long. Male flowers in narrow clusters  $\frac{1}{2}$  inch long and female flowers in short clusters  $\frac{1}{8}$  inch in diameter. Fruiting cones  $\frac{1}{2}$  inch in diameter, light brown. Native of tropical Asia and Australia. Planted in subtropical regions of Florida, southern Texas, southern Arizona, and California. Extensively naturalized in southern Florida. Used for windbreaks and planting on sand dunes as well as a street tree, ornamental, and hedge. Rapidly growing and adapted to dry, sandy, alkaline, and saline soils. Zone 10.

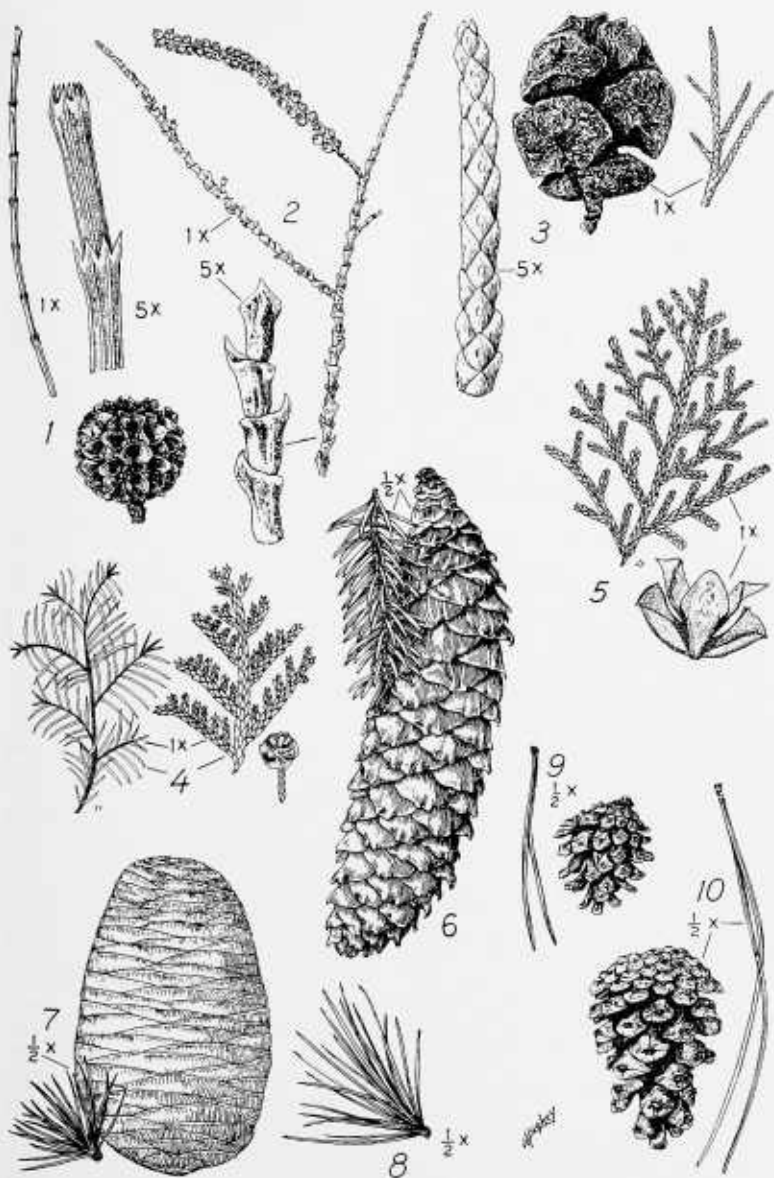
2. ATHEL TAMARISK, *Tamarix aphylla* (L.) Karst. (athel, evergreen athel, desert athel, evergreen tamarisk; *T. articulata* Vahl). Small to medium-sized evergreen tree with many spreading branches and dense rounded or irregular crown. Bark brown, smoothish. Twigs wiry, gray green, jointed, the joints composed of scale leaves  $\frac{1}{16}$  inch long each circling the twig and ending in a minute point. Flowers very small, pink, less than  $\frac{1}{16}$  inch long in slender branched clusters in summer. Fruit a small capsule. Native of northeastern Africa and western Asia. Planted in subtropical regions in southern Texas, southern Arizona, and California. Rapidly growing tree used for shade and windbreaks. Drought-resistant and tolerant of alkaline and saline soils. Zone (9).

3. ITALIAN CYPRESS, *Cupressus sempervirens* L. (Mediterranean cypress). Tall, medium-sized, cone-bearing evergreen tree (conifer) with erect

branches (horizontal in a variety) and very narrow, columnar crown. Bark thin, gray, smooth or slightly fissured. Leaves scalelike,  $\frac{1}{24}$  inch long, blunt-pointed, dark green, crowded and forming 4-angled twigs. Cones 1 inch in diameter, gray, with a short knob or point on each scale. Native of southern Europe and western Asia. The classical cypress of the ancient Greeks and Romans, much planted in formal gardens in southern Europe. Hardy in subtropical and warm temperate climates in the Pacific, Gulf, and South Atlantic States. Common in California. Suited for formal planting and borders. Zone (7).

4. SAWARA FALSE-CYPRESS, *Chamaecyparis pisifera* (Sieb. & Zucc.) Endl. (sawara cypress, retinospora). Large cone-bearing evergreen tree with narrow pyramidal crown and horizontal spreading branches. Bark reddish brown, shreddy, peeling in long thin strips. Leaves mostly scalelike, about  $\frac{1}{12}$  inch long, sharp-pointed, paired, overlapping, green above and whitish beneath, arranged in flattened, horizontal, fernlike sprays. Cones  $\frac{1}{4}$  to  $\frac{3}{8}$  inch long, rounded, whitish green, turning brown. Native of Japan, where it is a timber tree and ornamental. Commonly planted for ornament across the United States in many horticultural varieties. Among them are golden sawara false-cypress with golden yellow foliage, thread sawara false-cypress with weeping threadlike twigs, plume sawara false-cypress with feathery, awl-shaped leaves about  $\frac{1}{8}$  inch long whitish on one side, and moss sawara false-cypress with very feathery or mosslike spreading blue-green leaves whitish beneath about  $\frac{3}{8}$  inch long. The last two varieties retain the longer leaves of young plants, or juvenile foliage, though sometimes the short, scalelike leaves are present on the same plant. Zone 4.

5. ORIENTAL ARBORVITAE, *Thuja orientalis* L. (Chinese arborvitae, *Biota orientalis* (L.) Endl.). Small bushy or pyramidal cone-bearing evergreen



1. Horsetail casuarina. 2. Athel tamarisk. 3. Italian cypress. 4. Sawara false-cypress. 5. Oriental arborvitae. 6. Norway spruce. 7. Cedar-of-Lebanon. 8. Deodar cedar. 9. Scotch pine. 10. Austrian pine.

tree, branching near base, with compact narrow crown. Bark reddish brown, thin, forming papery scales. Leaves scalelike, mostly about  $\frac{1}{16}$  inch long, shiny yellow green, pointed or overlapping, fragrant, arranged in flat, vertical, fernlike sprays. Cones  $\frac{5}{8}$  to 1 inch long, bluish but becoming brown, with usually 6 scales ending in hooks or horns, remaining attached after opening. Native of northern China and Korea. A popular ornamental with many horticultural varieties of different shape and color of foliage. Used as a shrub around houses and in hedges. Planted across the United States but especially in the South and sometimes escaping. Zone 6.

**B. Evergreens, leaves needlelike (cone-bearing, or conifers), Nos. 6 to 12.**

6. NORWAY SPRUCE, *Picea abies* (L.) Karst. (*P. excelsa* Link). Large conical cone-bearing evergreen tree with spreading branches and drooping twigs. Bark reddish brown, scaly. Needles 4-angled,  $\frac{3}{8}$  to 1 inch long, dark green. Cones 4 to 6 inches long, light brown, with thin, slightly pointed, irregularly toothed scales. There are numerous horticultural forms. Native of northern and central Europe, where it is the common spruce and used for paper pulp and lumber. Adapted to cool moist climates of northeastern United States, Rocky Mountains, and Pacific coast. Widely planted for ornament, shelterbelts, Christmas trees, and forest plantations, and occasionally escaping from cultivation. Best suited to well-drained loam but successful on most other soils. Zone 2.

7. CEDAR-OF-LEBANON, *Cedrus libani* A. Rich. (*C. libanotica* Link). Large cone-bearing evergreen tree with pointed or irregular spreading crown of horizontal branches. Bark dark gray, becoming fissured and scaly. Twigs smooth or slightly hairy. Needles many in cluster on short spur branches (or single on leading twigs), 3-angled, short  $\frac{3}{4}$  to  $1\frac{1}{4}$  inches long,

dark or bright green. Cones 3 to 4 inches long, reddish brown, upright. Native of Asia Minor and Syria. Adapted to warm temperate and subtropical climates in Atlantic, Gulf, and Pacific regions but not hardy in far North. Beautiful ornamental tree of special interest because of its association with the Bible and the Holy Land. Zone 5.

8. DEODAR CEDAR, *Cedrus deodara* (Roxb.) Loud. (deodar). Large cone-bearing evergreen tree with regular pyramidal shape and graceful drooping branches down to base. Bark dark gray, becoming brown and deeply furrowed. Twigs densely hairy. Needles many in cluster on short spur branches (or single on leading twigs), 3-angled, short, 1 to 2 inches long, mostly dark blue green. Cones 3 to 5 inches long, reddish brown, upright. Native of Himalaya. Adapted to subtropical climates of Gulf, Mexican border, and Pacific regions and especially popular in California. Zone 7.

9. SCOTCH PINE, *Pinus sylvestris* L. (Scots pine). Large cone-bearing evergreen tree with irregular crown, spreading branches, and blue green foliage. Bark reddish brown, on older trunks becoming grayish and fissured into scaly plates. Needles 2 in cluster,  $1\frac{1}{2}$  to 3 inches long, blue green, usually twisted. Cones  $1\frac{1}{2}$  to  $2\frac{1}{2}$  inches long, yellow brown, with minute prickles. Native and widely distributed across Europe and northern Asia and one of the most important timber trees of Europe. Hardy across the United States. In the Northeast and in adjacent Canada extensively planted in forest plantations, shelterbelts, and for ornament and Christmas trees. Spreading and becoming naturalized. However, native pines are usually superior for forestry purposes. Thrives on poorer, sandy soils as well as on better loams. Resistant to city smoke. Zone 2.

10. AUSTRIAN PINE, *Pinus nigra* Arnold (*P. austriaca* Hoess, *P. laricina* Poir.). Medium-sized to large pyramidal cone-bearing evergreen tree with

spreading branches and dense, dark-green foliage. Bark dark gray, fissured into irregular, scaly plates. Needles 2 in cluster,  $3\frac{1}{2}$  to 6 inches long, dark green, stiff. Cones 2 to 3 inches long, yellow brown, shiny, usually with short prickles. Several geographic varieties and garden forms are distinguished. Native of central and southern Europe and Asia Minor and a valuable timber tree there. Across the United States one of the commoner foreign ornamental trees. Used also in shelterbelts and screens. Hardy in East extending north to southern New England and in west except coldest, hottest, and driest regions. Grows in sandy, loam, and clay soils. Tolerant of city dust and smoke. Zone 4.

11. UMBRELLA-PINE, *Sciadopitys verticillata* (Thunb.) Sieb. & Zucc. Small to medium-sized pyramidal cone-bearing evergreen tree with narrow dense crown and short horizontally spreading branches and shiny dark green foliage. Bark smoothish, gray and reddish brown beneath, separating in long shreds. Leaves of 2 kinds, small scalelike triangular leaves  $\frac{1}{8}$  to  $\frac{1}{4}$  inch long, single on twigs but crowded at ends and 2 or 3 clusters or rings of 8 to 30 flat needles 3 to 5 inches long, notched at end, grooved on both surfaces, shiny dark green above, paler with yellowish band beneath, spreading like ribs of an umbrella. Cone oblong, 2 to  $4\frac{1}{2}$  inches long. Native of Japan. A handsome slow-growing ornamental planted in the East and Pacific coast. Zone 5.

12. CRYPTOMERIA, *Cryptomeria japonica* (L. f.) D. Don (Japanese cryptomeria). Medium-sized or large pyramidal cone-bearing evergreen tree with horizontally spreading branches. Trunk straight, tapering from enlarged base. Bark reddish brown, fibrous, peeling off in long shreds. Leaves awl-shaped or needle-like, spirally arranged,  $\frac{1}{4}$  to  $\frac{5}{8}$  inch long, curved forward and inward, pointed, slightly flattened and 4-angled, stiff, usually dark blue green.

Cone rounded,  $\frac{1}{2}$  to  $\frac{3}{4}$  inch in diameter, brown, with bristly or spiny scales. Native of China and also of Japan, where it is the national tree and important forest and street tree. Grown as an ornamental in Eastern States north to Boston and in Pacific States. Zone 5.

C. Broadleaf evergreens (subtropical, except No. 13), leaves not divided into leaflets (simple), Nos. 13 to 19.

13. ENGLISH HOLLY, *Ilex aquifolium* L. Small to medium-sized evergreen tree with short, spreading branches and dense pyramidal crown. Leaves oval,  $1\frac{1}{2}$  to 3 inches long, stiff and leathery, the wavy edges with large spiny teeth, shiny dark green, lighter beneath. Flowers male and female on different trees, white, small, less than  $\frac{1}{4}$  inch long, fragrant, in late spring. Fruits  $\frac{1}{4}$  to  $\frac{3}{8}$  inch in diameter, berrylike, bright red, shiny, usually clustered, remaining on tree in winter. There are numerous horticultural forms. Native from western and southern Europe and northern Africa to western Asia and China. Planted in Atlantic, Southern, and Pacific States for the ornamental evergreen foliage and red berries. Male plants are needed for pollination and fruit formation. Zone 7.

14. CAJUPUT-TREE, *Melaleuca quinquenervia* (Cav.) S. T. Blake (punk-tree, bottlebrush; *M. leucadendron* of authors). Medium-sized to large, slender tree with drooping, smooth or silky twigs. Bark thick and spongy or corky, whitish, peeling off in many thin layers. Leaves evergreen, narrowly elliptical or lance-shaped, 2 to 4 inches long, pointed at base and apex, with parallel veins, thick, pale green on both sides. Flowers creamy white,  $\frac{3}{4}$  inch long, stalkless, in many-flowered clusters 2 to 6 inches long, with many stamens suggesting a bottle-brush, in summer and fall. Fruiting capsules less than  $\frac{1}{4}$  inch in diameter, brown, the clusters remaining on the tree. Native from Australia

to New Guinea. Subtropical tree planted in Florida, where it reseeds and has become naturalized, and in southern California and southern Texas. Fast growing and resistant to wind, drought, fires, and salt water. Suitable for windbreaks and beach planting as well as for ornament and shade. The bark is used for packing fruits and for roofs and boats. Cajeput oil of medicine is obtained from the leaves. Zone 10.

15. RED-IRONBARK EUCALYPTUS, *Eucalyptus sideroxylon* Cunn. (red ironbark, mulga ironbark eucalyptus, mugga). Medium-sized slender evergreen tree. Bark rough, deeply furrowed, reddish brown. Leaves lance-shaped, 3 to 6 inches long, often curved, gray green on both sides. Flowers showy, white to pink to red in different varieties, about  $\frac{3}{4}$  inch broad, numerous in clusters in winter and spring. Fruiting capsules oval,  $\frac{1}{4}$  to  $\frac{3}{8}$  inch in diameter. Native of Australia. Subtropical tree planted in southern California, where it is hardy, drought-resistant, and moderately tolerant of alkali. Zone (9).

16. LONGBEAK EUCALYPTUS, *Eucalyptus camaldulensis* Dehnh. (red-gum; *E. rostrata* Schlecht., not Cav.). Tall evergreen tree with slender symmetrical crown and slender, slightly drooping branches. Bark dark gray, rough and furrowed near base, smooth and peeling off above. Leaves lance-shaped, 4 to 6 inches long, leathery, long-pointed, with smooth edges, green on both sides. Flowers whitish,  $\frac{3}{4}$  inch broad, clustered. Fruiting capsules  $\frac{1}{4}$  inch in diameter. Native of Australia. Planted in subtropical regions of California, southern Arizona, southern Texas, and Florida. One of the hardiest species of eucalyptus in resistance to drought, frost, heat, and alkali. Thrives in good moist soils. Zone (9).

17. TASMANIAN BLUE EUCALYPTUS, *Eucalyptus globulus* Labill. (Tasmanian bluegum, bluegum). Very tall evergreen tree with straight trunk and narrow crown. Bark peeling off in

long thin strips, becoming smooth and grayish. Leaves lance-shaped, slightly curved, 6 to 12 inches long, leathery, long-pointed, with smooth edges, green on both sides, aromatic; leaves of young plants and young shoots paired, stalkless, broad and oval, bluish, covered with a bloom. Flowers whitish,  $1\frac{1}{2}$  inches broad, scattered, in winter and spring. Fruiting capsules 4-angled,  $\frac{3}{4}$  to 1 inch broad, warty, bluish white. Native of Tasmania. Subtropical species, the most commonly cultivated eucalyptus in the world. Common in California, where it grows very rapidly. Used as street tree, for windbreaks and screens, and in forest plantations for pulpwood. Adapted to a wide range of conditions and alkali-tolerant but thrives in good, moist soil. Sprouts from stumps. Objectionable because the roots penetrate defective sewers. Zone 9.

18. CAMPHOR-TREE, *Cinnamomum camphora* (L.) Nees & Eberm. (*Camphora camphora* (L.) Karst.). Small to medium-sized evergreen tree with enlarged base and dense oval crown. Leaves long-stalked, elliptical, 2 to 5 inches long, long-pointed, with 2 or more prominent side veins, pinkish when young, shiny green above and grayish white beneath, with odor of camphor when crushed. Flowers yellowish, small,  $\frac{1}{8}$  inch long, in clusters 2 to 3 inches long. Fruit a berry  $\frac{3}{8}$  inch in diameter, black, 1-seeded. Native of tropical Asia and Malaya to China and Japan. In the United States extensively planted as an ornamental in subtropical and warm temperate regions in Florida, along the Gulf, and in southern California. Also escaped from cultivation in the South. Alkali-tolerant. Camphor is obtained from the wood and leaves. Zone 9.

19. INDIA-RUBBER FIG, *Ficus elastica* Nois. (India rubber-plant, Indian rubber-tree). Large, much branched evergreen tree with enlarged or buttressed base, broad crown, and milky juice. Bark light gray, smoothish. Leaves large, oblong or elliptical, 4 to



11. Umbrella-pine. 12. Cryptomeria. 13. English holly. 14. Cajeput-tree. 15. Red-ironbark eucalyptus. 16. Longbeak eucalyptus. 17. Tasmanian blue eucalyptus. 18. Camphor-tree. 19. India-rubber fig. 20. Peppertree.

12 inches long, short-pointed, leathery, smooth, shiny green, lighter beneath. Fruits paired, stalkless, oblong,  $\frac{1}{2}$  inch long, greenish yellow. Native of tropical Asia. Cultivated in subtropical Florida and in southern California. This is the familiar rubber-plant grown indoors in the North. The milky latex has been used as a source of rubber. Zone 10.

**D. Broadleaf evergreens (subtropical), leaves divided into leaflets (compound), Nos. 20 to 23.**

20. **PEPPERTREE**, *Schinus molle* L. (California peppertree, Peruvian peppertree). Small to medium-sized spreading evergreen tree with short, gnarled trunk, rounded crown, graceful drooping branches, and fine foliage. Leaves compound, 6 to 12 inches long, drooping, with milky juice. Leaflets about 20 to 40, narrowly lance-shaped, 1 to 2 inches long, short-pointed, with edges smooth or slightly toothed, light green. Flowers male and female on different trees, yellowish white, small,  $\frac{1}{8}$  inch long, numerous in clusters 4 to 6 inches long. Fruits many, beadlike,  $\frac{3}{16}$  inch in diameter, reddish, remaining on tree in winter. Native from Peru to Argentina. Subtropical tree extensively planted in California, where it has become naturalized, and in southern Texas and southern Arizona. Adapted to a wide range of soils, alkali-tolerant, and drought-resistant. Subject to black scale and root rot. The shallow roots crack pavements and damage sewers. Zone 9.

21. **SILK-OAK**, *Grevillea robusta* A. Cunn. (silk-oak grevillea, Australian-ferntree). Large, graceful tree with many branches and evergreen fernlike foliage. Leaves 4 to 12 inches long, twice divided or very deeply lobed into narrow, pointed divisions with edges rolled under, deep green above and white silky beneath. Flowers orange or yellow,  $\frac{1}{4}$  inch long, long-stalked, in clusters 3 to 5 inches long, numerous on the trunk and main branches in spring and early summer. Pods  $\frac{3}{4}$

inch long, broad, curved, black, 1- or 2-seeded. Native of Australia. Planted in subtropical regions of Florida, southern Texas, southern Arizona, and California and indoors northward as a fernlike ornamental potted plant. Naturalized in southern Florida. Drought-resistant. The brittle branches break easily. Zone 9.

22. **CAROB**, *Ceratonia siliqua* L. (St. Johns-bread, algarroba). Small to medium-sized spreading evergreen tree with rounded crown. Bark dark reddish brown. Leaves compound, 4 to 8 inches long, with 4 to 10 oval leaflets 1 to 2 inches long, rounded, shiny dark green above, paler beneath. Flowers male and female on same or different tree, small, red to yellow in clusters 1 to 2 inches long. Pods large, 4 to 12 inches long, thick and flattened, leathery, dark brown, with sugary edible pulp, used for forage and human food. Native probably of Asia Minor and Syria but long cultivated in the Mediterranean Basin and elsewhere as a forage crop for the edible pods. In the United States limited to subtropical regions of Florida, southern Texas, southern Arizona, and California. Grown both as a shade tree and for forage. Adapted to hot dry climates and to a variety of soils including alkali, thriving in heavy soils. The name St. Johns-bread is from the mistaken belief that the seeds and sugary pulp were the locusts and wild honey which St. John the Baptist found in the wilderness. The pods were the "husks" in the parable of the Prodigal Son. Zone (9).

23. **GREENWATTLE ACACIA**, *Acacia decurrens* Willd. (green wattle; black-green-wattle acacia, or black wattle, and silvergreen-wattle acacia, or silver wattle, are varieties). Small to medium-sized evergreen tree with open rounded crown. Leaves finely divided, twice compound, 3 to 6 inches long, with 15 to 30 feathery forks, each with 30 to 80 very narrow leaflets  $\frac{1}{8}$  to  $\frac{3}{8}$  inch long, grayish green or dark green. Flowers crowded in many





21. Silk-oak. 22. Carob. 23. Greenwattle acacia. 24. Five-stamen tamarisk. 25. European larch. 26. Metasequoia. 27. Ginkgo. 28. Royal paulownia. 29. Common crapemyrtle.

fragrant yellow balls  $\frac{1}{4}$  inch in diameter in spring. Pods 2 to 4 inches long and  $\frac{1}{4}$  inch wide, reddish. Native of Australia. Subtropical tree extensively planted in California. Adapted to a wide range of soils. Zone 10.

**E. Deciduous, leaves needlelike or scalelike, Nos. 24 to 26.**

24. FIVE-STAMEN TAMARISK, *Tamarix pentandra* Pall. (salt-cedar; *T. gallica* of authors). Shrub or small tree with slender upright or spreading branches and narrow or rounded crown, resembling a juniper. Bark reddish brown, smoothish, becoming furrowed and ridged. Twigs long, slender, becoming purplish, shedding with leaves. Leaves many, crowded, scalelike,  $\frac{1}{16}$  inch long, narrow and pointed, blue green. Flowers pink, numerous, very small,  $\frac{1}{16}$  inch long, crowded in many narrow clusters at ends of twigs. Fruit a small capsule. Native of southeastern Europe and western Asia. Planted for ornament and erosion control and naturalized in Southern and Western States. Rapidly growing and tolerant of alkaline and saline soils. Abundant in thickets along streams, reservoirs, and irrigation ditches in the Southwest. Classed as an undesirable weed and a phreatophyte (literally, well-plant, having deep roots and high water use) and eradicated because of its waste of irrigation water. Zone 5.

25. EUROPEAN LARCH, *Larix decidua* Mill. (*L. europaea* DC., *L. larix* (L.) Karst.). Medium-sized cone-bearing deciduous tree with straight axis, pyramidal open crown becoming irregular, and spreading horizontal or drooping branches. Bark gray and pinkish brown, scaly. Needles many in cluster on blackish short spur branches (or single on leading twigs), flattened, short,  $\frac{3}{4}$  to  $1\frac{1}{4}$  inches long, soft bright green, turning yellow in autumn. Cones  $\frac{3}{4}$  to  $1\frac{1}{4}$  inches long, reddish and like rosebuds when young, upright, remaining attached several years and turning dark gray. Native of northern and central Europe and an

important timber tree there. Grown in Northern United States and adjacent Canada for ornament and in forest plantations and locally spreading. Zone 2.

26. METASEQUOIA, *Metasequoia glyptostroboides* Hu & Cheng (dawn-redwood). Large cone-bearing deciduous tree (conifer) with conical pointed crown of ascending and spreading branches. Trunk swollen at base, tapering into straight axis. Bark gray, the inner bark rusty brown, fissured into thin narrow strips. Twigs very slender, often paired, shedding with needles. Needles paired, in 2 rows, narrow, flattened, thin,  $\frac{3}{8}$  to 1 inch long, green to blue green, turning reddish brown in autumn. Cones rounded, about 1 inch in diameter, drooping, long-stalked, seeds narrowly winged. Native of central China but very local and rare. Discovered in 1944, named and introduced in 1948. Of considerable interest as a recently discovered surviving example of a fossil group. More closely related to baldcypress (*Taxodium distichum*) than to redwood (*Sequoia sempervirens*). Easily propagates by cuttings and grows rapidly in moist soil in humid temperate climates. Planted in the Southeast north on Atlantic coast to New York City and Boston and on Pacific coast. Zone (5).

**F. Deciduous, leaves fan-shaped, mostly clustered on short spur branches, No. 27.**

27. GINKGO, *Ginkgo biloba* L. (maidenhair-tree). Medium-sized to tall resinous tree with straight trunk, few branches, and conical to spreading crown. Bark gray, becoming deeply furrowed. Leaves 3 to 5 in a cluster on short spur branches or single, with leafstalks 1 to 2 inches long. Leaf blades oddly fan-shaped, 1 to 2 inches long and  $1\frac{1}{2}$  to 3 inches broad, often 2-lobed, with parallel veins, leathery, bright to dull green, turning yellow and shedding in fall. Pollen and seeds on different trees. Seeds single

or paired, stalked, plumlike, 1 inch long, yellowish, with an ill-smelling thin outer coat and large edible nut. Ginkgo is a living fossil from China related to conifers and the sole survivor of its family, apparently not found wild but long perpetuated in cultivation in China and Japan around temples. Adapted to moist temperate regions in eastern United States and Pacific coast. Especially suited as a street tree because it is resistant to smoke, dust, wind, and ice, and free from insect pests and disease. Male clones are preferred, because the fruits of the female tree have a disagreeable odor. Zone (5).

**G. Deciduous, leaves paired (opposite), not divided into leaflets (simple), Nos. 28-31.**

28. ROYAL PAULOWNIA, *Paulownia tomentosa* (Thunb.) Sieb. & Zucc. (paulownia, princess-tree, empress-tree). Small to medium-sized, widely spreading tree with stout branches. Bark gray brown with shallow fissures. Leaves paired, resembling those of catalpa, with leafstalks 3 to 8 inches long and very large heart-shaped leaf blades 5 to 16 inches long, with edges smooth or slightly 3-lobed, light green, slightly hairy above and densely hairy beneath. Flowers large and very showy, violet, about 2 inches long, fragrant, borne in dense upright clusters 6 to 10 inches long in spring before the leaves appear. Fruiting capsules egg-shaped, pointed, 1 to 1½ inches long, brown, remaining on tree in winter. Native of China. A rapidly growing ornamental planted for the showy violet flowers and large leaves. Eastern United States north to New York but not hardly where the winters are severe. Also in Pacific States. Thrives in rich moist soil and naturalized as a "weed" tree in waste places in Eastern States. Zone (5).

29. COMMON CRAPEMYRTLE, *Lagerstroemia indica* L. (crapemyrtle). Small tree or shrub often branched at base, with spreading crown. Bark smooth, light brown. Trunk slightly

angled and twigs 4-angled. Leaves paired or upper ones single, stalkless or nearly so, elliptical, 1 to 2 inches long, blunt or short-pointed, with smooth edges, hairless or nearly so. Flowers showy, usually pink, 1¼ to 1½ inches across, many in upright clusters 3 to 8 inches long forming solid masses in summer. Usually 6 rounded crapelike petals, crinkled or fringed, spreading on long slender stalks. Fruit a rounded capsule nearly ½ inch long containing many small winged seeds. Native of southeastern Asia. This handsome ornamental is much planted in the Southeast and on the Pacific coast for the profuse showy flowers. Persistent at old home sites and occasionally escapes. Many varieties with flower color from white to pink, red, and purple. Zone 7.

30. NORWAY MAPLE, *Acer platanoides* L. (Schwedler maple and Crimson King maple are varieties). Medium-sized to large spreading tree with rounded symmetrical crown of dense foliage. Bark dark brown, with narrow ridges and furrows. Leafstalks about 3 inches long, with milky juice. Leaves paired, heart-shaped, 3 to 7 inches in diameter, 5-lobed, with few pointed teeth, smooth, bright green, turning yellow in fall. Flowers yellowish green, abundant in masses of many-flowered clusters in spring before the leaves develop. Key fruits paired, long-winged, 1½ to 2 inches long, spreading horizontally. Native across Europe from Norway to Caucasus. Widely planted in eastern United States and in Pacific and Rocky Mountain regions. Fast growing shade and street tree, tolerant of city smoke and dust, and relatively free from insect pests and diseases. The popular variety Schwedler maple has bright red leaves when young, changing to dark green. Crimson King maple has deep red leaves which keep their color. Zone 4.

31. PLANETREE MAPLE, *Acer pseudoplatanus* L. (sycamore maple, "sycamore" in Europe). Large spreading tree with rounded crown. Bark with

broad flaky scales. Leafstalks 3 to 4 inches long. Leaves paired, heart-shaped at base, 3 to 6 inches in diameter, 5-lobed with the lobes pointed and coarsely toothed, dark green above, pale and smooth or slightly hairy beneath. Flowers yellowish green, distinctive, hanging in long, narrow clusters 3 to 7 inches long in spring. Key fruits paired, long-winged,  $1\frac{1}{4}$  to 2 inches long. Native of Europe and western Asia, where it is an important timber and shade tree. Planted as a shade tree in Pacific States and in Eastern States except coldest regions, but not as hardy as Norway maple. Rapidly growing and suited to exposed situations such as sea shores. Zone 5.

**H. Deciduous, leaves paired (opposite), divided into leaflets (compound), Nos. 32 and 33.**

32. AMUR CORKTREE, *Phellodendron amurense* Rupr. Medium-sized to large, aromatic tree with low spreading branches and rounded crown. Bark light gray, corky, deeply fissured, conspicuous in winter. Twigs yellowish gray. Leaves paired, compound, 6 to 12 inches long. Leaflets 5 to 13, oval, 2 to 4 inches long, long-pointed, with minute dots, shiny dark green above, light green and smooth or hairy beneath, turning yellow in fall. Flowers small, yellowish green,  $\frac{1}{4}$  inch long, in clusters 2 to 8 inches long in early summer. Fruit  $\frac{3}{8}$  inch in diameter, black, 5-seeded, ornamental, with odor of turpentine. Native of northern China and Manchuria. Hardy in most temperate regions of United States. Tolerant of city conditions and relatively free from insects and disease. Zone 3.

33. HORSECHESTNUT, *Aesculus hippocastanum* L. (common horsechestnut). Medium-sized to large spreading tree with rounded crown. Bark brownish, thin, fissured and scaly. Leaves paired, compound, with leafstalks 3 to 7 inches long. Leaflets 5 to 7, spreading fingerlike (palmate), elliptical, 4 to 10 inches long, wedge-

shaped at base and broader toward the abrupt point, toothed, dark green above, paler beneath. Flowers white with red spots, about  $\frac{3}{4}$  inch long, in large showy upright clusters. Fruiting capsule 2 to  $2\frac{1}{2}$  inches in diameter, spiny, with 1 or 2 large inedible seeds. Native of Balkan Peninsula. Widely planted across the United States and escaped from cultivation in the North-east. The showy flowers and large palmate leaves have made this species a popular ornamental and shade tree. Tolerant of city smoke but subject to insect attacks and disease. Zone 3.

**I. Deciduous, leaves borne singly (alternate), divided into leaflets (compound), Nos. 34 to 40.**

34. CHINESE SCHOLARTREE, *Sophora japonica* L. (Japanese pagoda-tree). Medium-sized tree with spreading branches and dense rounded crown. Bark gray brown, fissured. Twigs dark green, smooth or nearly so. Leaves 6 to 10 inches long, compound. Leaflets 7 to 17, narrowly oval, 1 to 2 inches long, short-pointed, with smooth edges, shiny dark green above, pale and finely hairy beneath. Flowers yellowish white,  $\frac{1}{2}$  inch long, bean-like, in loose showy clusters 6 to 12 inches long in late summer. Pods 2 to 3 inches long and  $\frac{3}{8}$  inch in diameter, narrowed between the seeds, often remaining on tree in winter. Native of China and Korea and cultivated around temples in Japan. Planted in the southern half of the United States and hardy north to New York. Especially suitable as a street tree because of its tolerance of city fumes, but slow growing. Relatively free from insect pests and diseases. Zone 4.

35. PERSIAN WALNUT, *Juglans regia* L. (English walnut). Medium-sized tree with spreading branches and rounded crown. Bark smooth, silvery gray. Compound leaves 8 to 16 inches long. Leaflets usually 5 to 9, oblong, 2 to 5 inches long, pointed, with edges usually smooth, bright green, nearly hairless. Male flowers in narrow clusters 2 to 4 inches long. Nuts  $1\frac{1}{2}$



30. Norway maple. 31. Planetree maple. 32. Amur corktree. 33. Horsechestnut.  
34. Chinese scholartree. 35. Persian walnut.

inches in diameter including the green husk, thin-shelled, sweet and edible, known as English walnuts. Native from southeastern Europe to Himalaya and China. Planted as a commercial nut tree in California and Oregon. Useful also as a shade tree in the Southern and Eastern States. Zone 6.

36. *AILANTHUS*, *Ailanthus altissima* (Mill.) Swingle (tree-of-Heaven ailanthus, tree-of-Heaven; *A. glandulosa* Desf.). Medium-sized, coarsely branched tree with smooth, striped, light brown bark. Leaves large, compound,  $1\frac{1}{2}$  to  $2\frac{1}{2}$  feet long, with 13 to 25 leaflets, short-stalked and mostly paired, broadly lance-shaped, 3 to 5 inches long, long-pointed, with 2 to 4 teeth near base, each tooth with a gland beneath. Flowers small, greenish,  $\frac{1}{4}$  inch long, in large clusters 6 to 10 inches long in summer, the male flowers with disagreeable odor. Fruits winged,  $1\frac{1}{2}$  inches long, reddish brown, showy in late summer and fall. Native of China but widely planted and naturalized as a "weed" tree in waste places in eastern United States, southern Rocky Mountains, and Pacific States. Rapid growing, with handsome coarse foliage like tropical trees. Not among the more desirable trees but successful in crowded city and smoky factory districts where most other kinds will not thrive. Planted also in shelterbelts. Objectionable about drains, springs, and wells, as the roots get into drains and both roots and leaves are poisonous. Grows on a variety of soils from sand to clay and spreads rapidly by suckers. Only seed-bearing plants should be propagated, because of the ill-scented male flowers and because the unpollinated seeds do not produce seedlings. Zone 4.

37. PANICLED GOLDENRAIN-TREE, *Koelreuteria paniculata* Laxm. (goldenrain-tree, China-tree, pride-of-India, varnish-tree). Small, sparingly branched tree with rounded open crown. Leaves once or twice compound, 6 to 15 inches long. Leaflets 7 to 15, oval, 1 to 3 inches long, coarsely and irregularly toothed, reddish

when young, dark green and smooth above, paler and slightly hairy beneath. Flowers bright yellow, small,  $\frac{1}{2}$  inch long, in broad, showy clusters 8 to 14 inches long in summer. Pods showy, bladderlike, egg-shaped,  $1\frac{1}{2}$  to 2 inches long, pointed, with papery walls, brown. Native of China, Korea, and Japan. Planted in Atlantic, southern, central, Rocky Mountain, and Pacific regions of the United States but not hardy in the colder regions. Drought-resistant, relatively free from insect pests and diseases, and tolerant of alkali. Zone 6.

38. CHINABERRY, *Melia azedarach* L. (chinatree, pride-of-China; umbrella chinaberry or umbrella-tree is a variety). Small tree with spreading, hemispherical crown or, in the umbrella chinaberry, with crowded branches forming a dense, flattened crown like an umbrella. Bark furrowed. Leaves large, twice compound, 1 to 2 feet long. Leaflets many, oval, 1 to 3 inches long, sharp-pointed, toothed or lobed, bright green, smooth. Flowers purplish,  $\frac{5}{8}$  inch across, fragrant, in open clusters 4 to 8 inches long in spring. Fruit  $\frac{5}{8}$  inch in diameter, yellow, 1-seeded. Native of Himalaya. Planted for shade and ornament in southern United States north to Virginia and west to California. Naturalized in the Southeast. Rapidly growing but short-lived. Zone 8.

39. SILKTREE, *Albizia julibrissin* Durazz. (silktree albizia, "mimosa," powder-puff-tree). Small, widely branched tree with spreading, flattened crown. Bark blackish, nearly smooth. Leaves twice compound, finely divided and fernlike or feathery, 6 to 15 inches long, with 10 to 24 forks, each with 30 to 60 small, oblong, pointed, pale-green leaflets  $\frac{3}{8}$  inch long. Flowers pink and showy, crowded in ball-like clusters of long threadlike stamens 1 to 2 inches in diameter through the summer. Pods 4 to 6 inches long, flat, green to brown. Native from Iran to China. Widely cultivated and escaped from cultiva-



36. Ailanthus. 37. Panicked goldenrain-tree. 38. Chinaberry. 39. Silktree.  
40. Flamboyant-tree.

tion in the Gulf and Atlantic States and planted also in Pacific States. In the Southeast, many trees have been killed by a serious wilt disease, but resistant selections are now available. As the hardiest of a group of tropical and subtropical leguminous trees, this handsome ornamental is reminiscent of warmer regions. Zone 7 (5).

40. FLAMBOYANT-TREE, *Delonix regia* (Bojer) Raf. (royal poinciana, flame-tree; *Poinciana regia* Bojer). Small tree with broad, widely spreading top, nearly evergreen but leafless for a time in spring. Bark gray brown, smoothish. Leaves finely divided, twice compound, 1 to 2 feet long, with 20 to 50 feathery forks, each with 30 to 70 oval leaflets  $\frac{1}{4}$  to  $\frac{1}{2}$  inch long, dark green. Flowers large and very showy, 3 to 4 inches across, bright orange red or scarlet, in large clusters in spring and summer. Pods large, 1 to  $1\frac{1}{2}$  feet long, flat, dark brown. Native of Madagascar. A brilliantly flowered tropical ornamental very popular in southern Florida, where it is naturalized. Planted also southern Texas and southern California. Zone 10.

**J. Deciduous, leaves borne singly (alternate), not divided into leaflets (simple), leaf edges smooth, Nos. 41 to 43 (see also No. 29).**

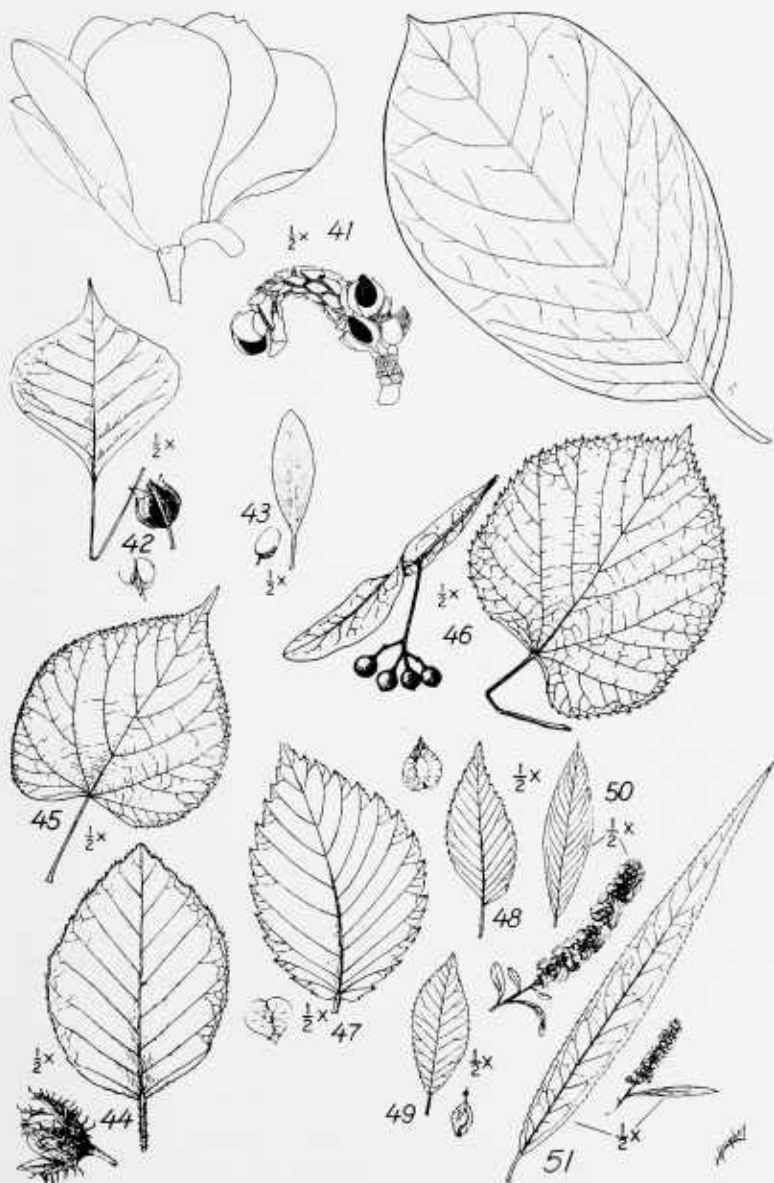
41. SAUCER MAGNOLIA, *Magnolia*  $\times$  *soulangiana* Soul. (*M. denudata*  $\times$  *liliflora*). Shrub or small tree with usually several trunks and widely spreading crown. Bark light gray, smooth. Leaves often large, oval, broadest toward apex, 5 to 8 inches long, abruptly short-pointed, tapering toward the short leafstalks, with smooth edges, thin, dull green, hairy beneath. Flowers numerous, very large and showy, like large tulips but opening widely like saucers, pink, purple, or white, white inside, 3 to 4 inches long, 4 to 8 inches across the 6 petals, often fragrant, in early spring before the leaves, present even on small shrubs. Fruits

oblong, like cucumbers, 4 to 5 inches long, opening along the sides to expose the red seeds. A hybrid of two Chinese species, yulan magnolia and lily magnolia. Several varieties differ mainly in flower size, color, and time of flowers. Widely planted in humid areas cross the United States as an ornamental for the gorgeous early spring flowers. Zone (5).

42. TALLOWTREE, *Sapium sebiferum* (L.) Roxb. (Chinese tallowtree; *Triadica sebifera* (L.) Small). Small spreading tree with several large branches and poisonous milky juice. Leafstalks 1 to 2 inches long. Leaf blades broadly oval or nearly round,  $1\frac{1}{2}$  to 3 inches long, long-pointed, with smooth edges, shiny light green, turning red or yellow in fall. Male and female flowers small, greenish, in dense clusters 2 to 4 inches long. Fruiting capsules  $\frac{1}{2}$  inch in diameter, with 3 white, oval, waxy seeds remaining attached. Native of China, where candles are made from the waxy seed coats. Cultivated and naturalized in the South Atlantic and Gulf States. Zone 9.

43. RUSSIAN-OLIVE, *Elaeagnus angustifolia* L. (oleaster). Small tree or shrub, sometimes spiny, with crooked trunk, irregular crown, and silvery twigs and foliage. Bark brown, shredding. Leaves lance-shaped,  $1\frac{1}{2}$  to 3 inches long, blunt-pointed, with smooth margins, grayish green above, silvery scaly beneath. Flowers silvery and pale yellow, small  $\frac{3}{8}$  inch long, fragrant, in spring or summer. Fruits oval,  $\frac{3}{8}$  inch long, yellow with silvery scales, sweet and mealy, 1-seeded. Native from southern Europe to western and central Asia. Planted as an ornamental for its handsome silvery gray foliage and fragrant flowers nearly throughout temperate United States and occasionally escapes from cultivation. Hardy in the far North and especially adapted to drier regions, such as Great Plains and Rocky Mountains. Extensively used in shelterbelts. Drought-resistant, tolerant of city smoke, and suited to a wide range of





41. Saucer magnolia. 42. Tallowtree. 43. Russian-olive. 44. European beech. 45. European linden. 46. Silver linden. 47. English elm. 48. Siberian elm. 49. Chinese elm. 50. White willow. 51. Weeping willow.

soils from moist to sandy and alkaline. Zone 3.

**K. Deciduous, leaves borne singly (alternate), not divided into leaflets (simple), leaf edges toothed but not lobed, Nos. 44 to 53.**

44. EUROPEAN BEECH, *Fagus sylvatica* L. (purple, cutleaf, and weeping European beech are horticultural varieties). Medium-sized to large tree with symmetrical oval crown and dense foliage. Bark smooth, dark gray. Leaves in 2 rows, 2 to 4 inches long, short-pointed, minutely toothed, hairy when young, shiny dark green above and light green beneath, turning reddish brown in fall. Flowers male and female, small, in early spring. Fruit a spiny bur 1 inch long, with 2 or 3 triangular edible seeds  $\frac{3}{4}$  inch long known as beechnuts. Native in central and southern Europe, an important hardwood forming extensive forests. Planted in northeastern United States and in Pacific States. Zone 4.

45. EUROPEAN LINDEN, *Tilia × europaea* L. (common linden; *T. cordata* × *platyphyllos*, *T. vulgaris* Hayne). Large tree with dense pyramidal crown. Leaves in 2 rows, heart-shaped, 2 to 4 inches long, short-pointed, the 2 sides unequal at base, sharply toothed, dark green above, bright green beneath with tufts of hairs in angles of main veins. Flowers pale yellow,  $\frac{1}{4}$  inch long, very fragrant in clusters on a strap-shaped greenish stalk in summer. Fruits nutlike,  $\frac{1}{4}$  inch in diameter. A hybrid of two European species, littleleaf linden and bigleaf linden. In the United States adapted to moist temperate regions, especially in the Northeast and Pacific Northwest, as a shade tree tolerant of city conditions. The flowers are a good source of honey. Zone 3.

46. SILVER LINDEN, *Tilia tomentosa* Moench (white linden). Large tree with upright branches and dense broad pyramidal crown. Twigs white hairy. Leaves in 2 rows, heart-shaped and

rounded, 2 to 5 inches long, long-pointed, sharply toothed, dark green and slightly hairy above when young, beneath silvery white with a coat of woolly hairs. Flowers pale yellow,  $\frac{3}{8}$  inch long, fragrant, in clusters on a strap-shaped greenish stalk in summer. Fruits nutlike,  $\frac{3}{8}$  inch long, oval, minutely warty and slightly 5-angled. Native of southeastern Europe and western Asia. In the United States suited to moist temperate regions, especially in the East, but planted also west to the Pacific States. Tolerant of city conditions and resistant to heat and drought. Zone 4.

47. ENGLISH ELM, *Ulmus procera* Salisb. (*U. campestris* of authors in part). Large tree with straight trunk, spreading and nearly horizontal branches, and oval crown. Bark deeply fissured. Leaves in 2 rows, elliptical, 2 to 3 inches long, short-pointed, the 2 sides unequal, doubly toothed, dark green and rough above, soft-hairy beneath. Flowers small, greenish, in clusters in early spring. Fruits flattened,  $\frac{1}{2}$  inch in diameter. Native of western and southern Europe. In the United States planted in moist temperate regions of Pacific and Eastern States. Tolerant of city smoke but produces undesirable root sprouts. Subject to Dutch elm disease and attacked by elm leaf beetle. Zone 5.

48. SIBERIAN ELM, *Ulmus pumila* L. (Asiatic elm, Pekin elm, dwarf elm, dwarf Asiatic elm; erroneously called Chinese elm, which is *U. parvifolia* Jacq., No. 49). Small to medium-sized tree with rounded crown and rough bark. Twigs hairy when young. Leaves in 2 rows, narrowly elliptical, small,  $\frac{3}{4}$  to 2 inches long, short-pointed, the two sides almost equal, toothed, thick, smooth and dark green above, becoming smooth beneath. Flowers small, greenish, in clusters in early spring. Fruits flattened,  $\frac{1}{2}$  inch in diameter. Native from Turkestan to eastern Siberia and northern China. Widely grown in central and western United States for shade and shelterbelts. Hardy in dry regions and

drought-resistant, tolerates city smoke and poor soils, and grows rapidly. Subject to cotton root rot and canker disease. Zone 4.

49. CHINESE ELM, *Ulmus parvifolia* Jacq. Small tree with broad rounded crown and spreading branches, shedding leaves in fall or half-evergreen in warm climates. Bark dark brown, mottled, smooth or rough. Twigs hairy. Leaves in 2 rows, elliptical, small,  $\frac{3}{4}$  to 2 inches long, short-pointed, the two sides slightly unequal, toothed, thick and leathery, smooth and shiny dark green above, paler and becoming nearly smooth beneath, turning to red or purple or remaining green into winter in warm climates. Flowers small, greenish, in clusters in fall. Fruits elliptical,  $\frac{3}{8}$  inch long, flattened. Native of northern and central China, Korea, and Japan. Planted especially in Gulf and Pacific States but hardy northward in the East. Fast growing shade tree and ornamental, used also for shelterbelts. Zone 5.

50. WHITE WILLOW, *Salix alba* L. Medium-sized tree with spreading branches and whitish foliage. Leaves lance-shaped, 2 to 4 inches long, long-pointed, finely toothed, whitish and silky beneath. Male and female flowers on different trees in early spring, minute, many in clusters 2 inches long. Capsules with cottony seeds. Native from Europe and northern Africa to central Asia. Grown for ornament in moist temperate regions of the United States and adjacent Canada, where it has become naturalized. A commonly planted variety or hybrid of this species with yellow branches (yellowstem white willow, golden willow; var. *vitellina* (L.) Stokes) is one of the basket willows. Both the typical form and this variety have been used in shelterbelts in the North. Zone 2.

51. WEEPING WILLOW, *Salix babylonica* L. (Babylon weeping willow). Small to medium-sized tree with long, slender, drooping branches. Bark gray brown, rough and fissured. Leaves narrowly lance-shaped, 2 to 6

inches long, long-pointed, finely toothed, dark green above and paler beneath, smooth. Male and female flowers on different trees in early spring, minute, many in clusters  $\frac{3}{4}$  to  $1\frac{1}{2}$  inches long. Capsules with cottony seeds. Native of China. Long planted for its weeping foliage as a lawn and landscape tree especially near water in eastern United States where it has become naturalized. Grown also in Western States. Adapted to moist soil and tolerant of city smoke. The branches are brittle, and the roots invade sewers. Zone (6).

52. LOMBARDY POPLAR, *Populus nigra* L. (black poplar is the typical variety; Lombardy poplar is a hybrid clone known as var. *italica* Muenchh.). Medium-sized to tall columnar tree with narrow crown of upright branches. Bark gray, furrowed. Leafstalks 1 to 2 inches long, slender, flattened. Leaf blades wedge-shaped or triangular,  $1\frac{1}{2}$  to 3 inches long, long-pointed, the edges with curved teeth, smooth or slightly hairy. The trees are male only and do not produce seeds, the male flowers many in clusters 2 inches long. Black poplar is native of Europe and western Asia. Lombardy poplar, distinguished by its columnar crown, is widely cultivated almost throughout the United States and spreads by root-sprouts. Grown especially in rows for shelterbelts, screens, roadside trees, and formal effects. Short-lived, subject to European canker disease, and not recommended. The roots may damage nearby drains. Zone 2.

53. CAROLINA POPLAR, *Populus*  $\times$  *canadensis* Moench (*P. deltoides*  $\times$  *nigra* var. *italica*; *P.*  $\times$  *eugenei* Simon-Louis). Large tree with rounded, spreading crown. Bark gray, furrowed. Leafstalks 1 to 2 inches long, flattened. Leaf blades triangular, 3 to 4 inches long, long-pointed, the edges with curved teeth, shiny green and smooth on both sides. The trees are male only and not producing seeds, the male flowers many

in clusters 3 inches long in early spring. A hybrid clone which probably originated in Europe. Extensively planted across the United States and spreads from cultivation by root-sprouts. Tolerant of city smoke and dust and quick growing, but not recommended for city planting because the roots penetrate sewers. Zone 5.

**L. Deciduous leaves borne singly (alternate), not divided into leaflets (simple), leaf edges lobed, Nos. 54 to 60 (see also No. 44).**

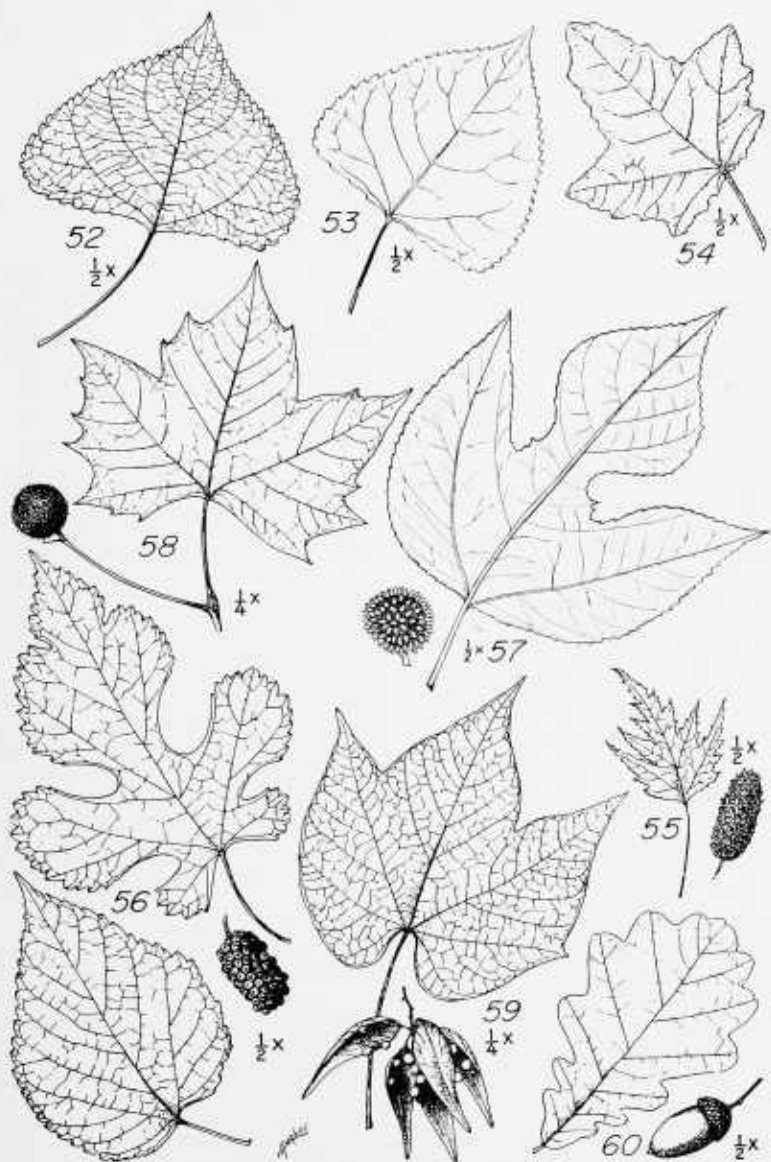
54. **WHITE POPLAR**, *Populus alba* L. (cele; silver poplar and Bolleana poplar are clones). Large, much branched, wide-spreading tree. Bark smoothish, whitish or light gray. Leaves long-stalked, oval or 3- or 5-lobed and maplelike,  $2\frac{1}{2}$  to 4 inches long, short-pointed, coarsely and irregularly toothed, dark green above with a white hairy coat beneath, turning reddish in fall. Male and female flowers on different trees in early spring, many in clusters 2 to 3 inches long. Capsules with cottony seeds. Native from central and southern Europe to central Asia. Planted across the United States and naturalized in Eastern States and adjacent Canada. Spreads by objectionable root-sprouts, and the roots may damage drains and sewers. The commonly cultivated silver poplar, a clone with maplelike leaves silvery white beneath, is tolerant of city smoke but its leaves become dirty colored from city dust. Bolleana poplar is another clone with columnar shape and leaves green beneath. Gray poplar (*P. canescens* (Ait.) Sm.), thought to be a hybrid of white poplar and European aspen (*P. tremula* L.), has toothed leaves but not lobed. Zone 3.

55. **EUROPEAN WHITE BIRCH**, *Betula pendula* Roth (European birch, European weeping birch; *B. alba* L. in part). Medium-sized tree with slender, drooping branches. Bark white, papery. Leaves long-stalked, triangular, 1 to  $2\frac{1}{2}$  inches long, long-pointed, doubly toothed, also deeply lobed in

the commonly cultivated varieties, smooth. Flowers male and female, small, in narrow clusters in early spring. Fruiting cones 1 inch long, narrow, slender stalked. There are numerous horticultural varieties. Extensively planted across the United States as a lawn tree for its white bark and graceful drooping branches. Subject to attacks by the bronze birch borer. Zone 2.

56. **WHITE MULBERRY**, *Morus alba* L. (silkworm mulberry; Russian mulberry and weeping mulberry are varieties). Small tree with rounded crown and spreading branches, juice milky. Leaves broadly oval but variable in shape,  $2\frac{1}{2}$  to 7 inches long, rounded or heart-shaped at base, short-pointed, coarsely toothed and often lobed, light green and smooth above, slightly hairy beneath. Male and female flowers small and greenish, clustered, in spring. Fruits  $\frac{3}{8}$  to 1 inch long, white, pinkish, or purplish, edible. Native of China. Extensively grown and naturalized in many countries, as the leaves are the main food of silkworms. Widely planted for ornament across the United States and naturalized in the East. Russian mulberry, a hardy variety, has been used in shelterbelts. Male trees or fruitless varieties, such as the rapidly growing Kingan fruitless variety, are preferred. Zone 4.

57. **PAPER-MULBERRY**, *Broussonetia papyrifera* (L.) Vent. (*Papyrius papyrifera* (L.) Kuntze). Small to medium-sized tree with wide spreading rounded crown and often irregular shaped trunk, juice milky. Bark smoothish, light gray to brown. Twigs hairy. Leaves single or sometimes paired, long-stalked, oval, 3 to 8 inches long, heart-shaped at base, long-pointed, coarsely toothed and often deeply and irregularly lobed, rough hairy above and soft gray hairy beneath. Male and female flowers on different trees, small, greenish, and inconspicuous. Fruits round,  $\frac{3}{4}$  inch in diameter, orange to red, showy. Native of eastern Asia in Thailand, Bur-



52. Lombardy poplar. 53. Carolina poplar. 54. White poplar. 55. European white birch. 56. White mulberry. 57. Paper-mulberry. 58. London planetree. 59. Chinese parasol tree. 60. English oak.

ma, China, possibly Japan, and perhaps elsewhere. Planted as an ornamental and street tree and escaping or naturalized in Eastern United States from New York to Kansas and southward. Hardy and does well on poor soil and under difficult conditions of heat, smoke, and dust. The common name refers to papermaking from the fibrous bark in China. Zone 6.

58. LONDON PLANETREE, *Platanus*  $\times$  *acerifolia* (Ait.) Willd. (*P. occidentalis*  $\times$  *orientalis*). Large tree with upright axis, spreading branches, and rounded crown. Bark peeling off in large flakes, smoothish, with patches of brown, green, and gray. Leaves long-stalked, heart-shaped, 5 to 10 inches long and wide, 3- or 5-lobed, with edges of the triangular pointed lobes smooth or with few teeth, bright green and shiny above, pale beneath. Flowers male and female in ball-like clusters in spring. Fruit of usually 2 bristly balls 1 inch in diameter, conspicuous on trees in winter. Probably a hybrid between American sycamore and oriental planetree, originated long ago. Widely planted as a street tree in Eastern United States and Pacific coast and southern Rocky Mountain regions. Tolerant of city smoke and alkali but subject to a canker disease. Zone 5.

59. CHINESE PARASOLTREE, *Firmiana platanifolia* (L. f.) Shott & Endl. (Phoenix-tree, Japanese varnish-tree,

bottletree; *Firmiana simplex* of authors, *Sterculia platanifolia* L.). Small to medium-sized tree with rounded crown. Bark smooth, gray green. Leaves long-stalked, very large, heart-shaped, 6 to 12 inches long, 3- or 5-lobed with pointed lobes and smooth edges, finely hairy beneath. Flowers small, yellow green,  $\frac{1}{2}$  inch long, in clusters 8 to 18 inches long in summer. Fruit 2 to 4 inches long, showy, of 4 or 5 open podlike parts with pealike seeds. Native of China and Japan but widely planted as an ornamental and street tree in warmer regions of United States, including South Atlantic and Gulf States and California. Fast-growing and naturalized in Southeastern States. Zone 9.

60. ENGLISH OAK, *Quercus robur* L. Medium-sized to large spreading tree with short stout trunk, widespreading branches, and broad rounded crown. Bark dark, deeply furrowed. Leaves oblong, 2 to 5 inches long, with 7 to 15 rounded lobes, smooth, dark green above and pale blue green beneath. Flowers male and female, small, in early spring. Acorns 1 to 5 on a stalk 1 to 3 inches long,  $\frac{5}{8}$  to 1 inch long, a third enclosed by the cup. There are many horticultural varieties. Native of Europe, northern Africa, and western Asia. In the United States planted chiefly in the Pacific, Gulf, and South Atlantic States. Zone 5.

## Selected References

- Bailey, L. H.  
1925. *The Standard Cyclopedia of Horticulture*. 3 v., illus. The Macmillan Co., New York. [Popular ed. 1935; reprinted 1947.]
1933. *The Cultivated Conifers in North America*. 404 pp., illus. The Macmillan Co., New York.
- and Bailey, Ethel Zoe, compilers.  
1941. *Hortus Second*. 778 pp., illus. The Macmillan Co., New York.
- Barrett, Mary Franklin.  
1956. *Common Exotic Trees of South Florida (Dicotyledons)*. 414 pp., illus. Univ. of Fla. Press, Gainesville.
- Beale, James H.  
1960. *The Evergreens*. 285 pp., illus. Doubleday & Co., Garden City, N.Y.
- Cloud, Katherine M-P.  
1960. *Evergreens for Every State; How to Select and Grow Them Successfully in Your Locality*. 227 pp., illus. Chilton Co., Philadelphia and New York.
- Dallimore, W., and Jackson, A. Bruce.  
1948. *A Handbook of Coniferae Including Ginkgoaceae*. Ed. 3, 682 pp., illus. Edward Arnold & Co., London.
- Dayton, William A.  
1952. *United States Tree Books; a Bibliography of Tree Identification*. U.S. Dept. Agr. Bibliog. Bul. 20, 32 pp. [Out of print.]
- Felt, Ephraim Porter.  
1943. *Shelter Trees in War and Peace*. 320 pp., illus. Orange Judd Publishing Co., New York.
- Friend, W. H.  
1942. *Plants of Ornamental Value for the Rio Grande Valley of Texas*. Texas Agr. Expt. Sta. Bul. 609, 156 pp., illus. College Station.
- Grant, John A., and Grant, Carol L.  
1943. *Trees and Shrubs for Pacific Northwest Gardens*. 335 pp., illus. F. McCaffrey, Seattle.
- Graves, Arthur Harmount.  
1956. *Illustrated Guide to Trees and Shrubs; A Handbook of the Woody Plants of the Northeastern United States and Adjacent Regions*. Rev. ed., 271 pp., illus. Harper and Bros., New York.
- Hottes, Alfred Carl.  
1952. *The Book of Trees*. Ed. 3, 440 pp., illus. A. T. De La Mare Co., Inc., New York.
- Hoyt, Roland Stewart.  
1938. *Check Lists for the Ornamental Plants of Subtropical Regions*. 383 pp., illus. Livingston Press, Los Angeles.
- Kuck, Loraine E., and Tongg, Richard C.  
1958. *Hawaiian Flowers and Flowering Trees*. 158 pp., illus. Chas. E. Tuttle Co., Rutland, Vt., and Tokyo.
- Kumlien, L. L.  
1946. *The Friendly Evergreens*. 237 pp., illus. D. Hill Nursery Co., Dundee, Ill. [Reprinted 1954.]
1954. *Evergreens*. 91 pp., illus. Rinehart and Co., New York.
- Little, Elbert L., Jr.  
1949. *Fifty Trees from Foreign Lands*. U.S. Dept. of Agr. Yearbook 1949: 815-832, illus. *In Trees*, The Yearbook of Agriculture 1949, 944 pp., illus. U.S. Government Printing Office, Wash. 25, D.C. [Reprinted as Yearbook Separate No. 2157, pp. 815-832, illus., 1950.]
1949. *Important Forest Trees of the United States*. U.S. Dept. Agr. Yearbook 1949: 763-814, illus. *In Trees*, The Yearbook of Agriculture 1949, 944 pp., illus. U.S. Government Printing Office, Wash. 25, D.C. [Reprinted as Yearbook Separate No. 2156, pp. 763-814, illus., 1950.]
- Wadsworth, Frank H., and Marrero, José.  
1962. *Arboles Comunes de Puerto Rico e Islas Vírgenes*. Illus. Universidad de Puerto Rico, Río Piedras, Puerto Rico.
- Maino, Evelyn, and Howard, Frances.  
1955. *Ornamental Trees; An Illustrated Guide to Their Selection and Care*. 219 pp., illus. Univ. of Calif. Press, Berkeley and Los Angeles.
- Mattoon, H. Gleason, ed.  
1958. *Plant Buyer's Guide of Seed and Plant Materials in the Trade*. Ed. 6, 298 pp. Mass. Hort. Soc., Boston.

- McMinn, Howard E., and Maino, Evelyn.  
1946. *An Illustrated Manual of Pacific Coast Trees*. Ed. 2, 409 pp., illus. Univ. of Calif. Press, Berkeley.
- Menninger, Edwin A.  
1958. *What Flowering Tree is That? A Handbook for the Tropics*. Rev. ed., 176 pp., illus. Stuart, Fla.
- Mowry, Harold.  
1931. *Native and Exotic Palms of Florida*. Fla. Agr. Expt. Sta. Bul. 228, 71 pp., illus. Gainesville.
1933. *Ornamental Trees*. Fla. Agr. Expt. Sta. Bul. 261, 134 pp., illus. Gainesville.
- Mulford, Furman Lloyd.  
1927. *Trees for Town and City Streets*. U.S. Dept. Agr. Farmers' Bul. 1208, rev., 30 pp., illus. [Out of print.]
1928. *Trees for Roadside Planting*. U.S. Dept. Agr. Farmers' Bul. 1482, rev., 50 pp., illus. [Reprinted 1946; out of print.]
- Neal, Marie C.  
1948. *In Gardens of Hawaii*. Bernice P. Bishop Museum Special Pub. 40, 805 pp., illus. Honolulu.
- Pertichik, Bernard, and Pertichik, Harriet.  
1951. *Flowering Trees of the Caribbean*. 125 pp., illus. Rhinehart & Co., Inc., New York and Toronto.
- Rehder, Alfred.  
1940. *Manual of Cultivated Trees and Shrubs Hardy in North America*. Ed. 2, 996 pp., illus. (map). The Macmillan Co., New York.
- Rock, Joseph F.  
1917. *The Ornamental Trees of Hawaii*. 210 pp., illus. Honolulu.
- Sturrock, David, and Menninger, Edwin A.  
1946. *Shade and Ornamental Trees for South Florida and Cuba*. 172 pp., illus. Stuart Daily News, Inc., Stuart, Fla.
- U.S. National Arboretum, Agricultural Research Service.  
1960. *Plant Hardiness Zone Map*. U.S. Dept. Agr. Misc. Pub. 814, folded map. (For sale by Superintendent of Documents, U.S. Government Printing Office, Wash. 25, D.C. Price 15 cents.)
- Van Melle, P. J.  
1955. *Shrubs and Trees for the Small Place; Hardy Deciduous Materials for the Home Grounds*. Rev. ed., edited by Montague Free. 246 pp., illus. Amer. Garden Guild and Doubleday & Co., Inc., Garden City, N.Y.
- Wilson, Ernest H.  
1915. *Aristocrats of the Trees*. 279 pp., illus. Stratford Co., Boston. [Reprinted 1930.]
- Wyman, Donald.  
1951. *Trees for American gardens*. 376 pp., illus. The Macmillan Co., New York.